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(54) SEMICONDUCTOR PHOTODETECTING AND LIGHT EMITTING DEVICE

(57) Abstract:

PURPOSE: To improve the coupling efficiency with an optical fiber by applying a forward bias or a reverse bias from a power supply depending on the light emitting mode and the photodetecting mode through a changeover switch to a photodetector/light emitting device where a photodetector and a light emitting element are laminated.

CONSTITUTION: The semiconductor photodetector and light emitting device 3 is constituted by laminating the light emitting element 2 on the photodetector 1. In the light emitting mode for transmission, common terminals c1, c2 of a changeover switch SW12 are connected to or disconnected to/from terminals a1, a2 according to transmission data, then a forward bias voltage is applied between (p) and (n) electrodes 4, 5 being common electrodes of the light emitting element 2 from a drive power source 11 at ON state, a light emitting current flows, a light is generated from the element 2 and transmitted to the optical fiber. In connecting terminals c1, c2 of the SW12 to b1, b2 at the photodetection mode at reception, a negative volt-

age is fed to the electrode 4 from the power supply 11, both the elements 1, 2 are reversely biased, and when light is incident from the optical fiber, both the elements 1, 2 have the photodetecting function, a current in response to the incident light flows from a resistor 15 and a diode 14 to the (n) and (p) electrodes 6, 4 and is outputted from terminals 16, 17.

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